



## Chronic Kidney Disease (CKD)

### What is chronic kidney disease?

Chronic kidney disease is the term for progressive loss of kidney function. It can affect cats and dogs of any age, but is twice as common in cats, and one of the most common illnesses affecting older cats.

### What causes chronic kidney disease?

Any long-term damage to the kidneys has the potential to cause chronic kidney disease. This can be due to conditions such as polycystic kidney disease (e.g in Persian cats), kidney tumours, kidney stones, kidney infections, toxins and drugs, and autoimmune diseases.

In the large majority of cases, however, no cause is identified and the disease is termed “idiopathic”. In these cases, the filtration systems of the kidney are replaced with scar tissue, and the cause for this is not well-understood.

### What are the signs of chronic kidney disease?

Signs usually appear gradually, and are initially subtle but get worse with time. Occasionally there can be a more abrupt onset. Signs can include:

- Weight loss
- Increased urination and thirst (known medically as polyuria and polydipsia, or PUPD)
- Poor appetite
- Vomiting
- Lethargy

### How is chronic kidney disease diagnosed?

A diagnosis starts with your vet asking questions about the signs your pet is showing at home, or noticing weight loss at a routine check-up. They may then suggest:

- *Blood tests* to check for an increase in waste products that the kidneys usually excrete (urea, creatinine & SDMA), to check blood salt levels, and to rule out other causes of the symptoms
- *Urine sample* to see how well the kidneys are concentrating urine – dilute urine supports a diagnosis of kidney failure – and to look for a urinary tract infection
- *Ultrasound scan* to look at the structure of the kidneys and look for tumours, stones, cysts, and other causes of your pet’s symptoms
- *Kidney biopsy* can help identify an underlying cause such as toxins, cancers, and autoimmune diseases by taking a sample of the kidney, but carries risk and is unsuitable for many patients

Once a diagnosis has been made, usually using a combination of bloodwork and urine tests, further testing can be used to “stage” how advanced the loss of kidney function is. This can include:

- *Further urine tests* to measure the amount of protein being lost in the urine

- *Blood pressure measurement* to check if the kidney disease is causing high blood pressure

Please see “*What is the prognosis for chronic kidney disease?*” below for more information on staging.

### **How is chronic kidney disease treated?**

Damage that has occurred to the kidneys unfortunately cannot be reversed. If a treatable cause (stones, tumours, infection) has been found, your vet can offer treatments to prevent any further loss. For the majority of cases, where a cause is not identified, treatment is aimed at slowing down further loss of function and improving quality of life.

Treatments often depend on stage, your pet’s individual signs, and your/your pet’s preferences. Not all treatments are suitable for all patients, so talk to your vet to identify the combination that is right for your pet. This may include:

#### *Dietary Management*

Currently, a specialised diet for kidney disease is among the most effective treatments to increase life expectancy in CKD patients. These diets have reduced levels of protein and phosphorous to protect the kidneys, and healthy fats to combat weight loss. The diet should be fed as the only source of food.

- *Hill’s k/d* is available as biscuits, tinned food, and treats for both dogs and cats
- *Royal Canin Renal* is available as biscuits and tinned food for both dogs and cats
- *Purina ProPlan NF Renal Function* is available as biscuits and tinned food for both dogs and cats

Transition to the diet should be made slowly as pets with kidney disease may have a low appetite. If your pet will not eat a kidney diet, it is more important that they eat something to maintain their weight, even if this is just their usual food.

#### *Medications for Kidney Protection*

Changes in the body caused by kidney failure can in turn worsen kidney function. This vicious cycle may be slowed by some medications:

- *Blood pressure medications* such as benazepril (Forketor), amlodipine (Amodip), or telmisartan (Semintra) if your pet has high blood pressure or protein in their urine, to protect the kidneys, heart, eyes, and brain
- *Phosphate binders* if your pet’s phosphate levels are still too high even on a kidney diet

#### *Supportive Medications*

The following medications do not treat or protect the kidneys, but can help with quality of life:

- *Appetite stimulants* such as mirtazapine tablets or skin gel (Mirataz) if appetite is poor
- *Anti-sickness* medications such as metoclopramide, and antacids such as omeprazole
- *Antibiotics* for urinary tract infections (your pet’s dilute urine makes them vulnerable to this)
- *Potassium supplements* if your pet’s potassium electrolyte is persistently low

#### *Hydration*

Since your pet will be urinating more and unable to concentrate their urine, they are very vulnerable to dehydration. In turn, dehydration can cause sudden worsening of kidney disease. Adequate hydration can be encouraged by offering:

- Running water sources such as pet fountains or dripping taps

- Flavoured water sources e.g. chicken/tuna
- Tinned/wet foods, and foods in gravy
- Adding further water to the food
- Subcutaneous fluid in the practice or, sometimes, given by you at home

### Hospitalisation

Sometimes a stay in hospital on fluids and supportive care is needed if your pet has an episode of dehydration and deterioration in kidney function.

### **What is the prognosis/outlook for chronic kidney disease?**

It is important to understand that signs of kidney disease usually only appear once 75% of kidney function has already been lost.

There is a staging system developed by the International Renal Interest Society (IRIS) for dogs and cats. It uses a combination of blood results (creatinine and SDMA), urine concentration (USG), urine protein levels (UPC), and blood pressure to indicate how advanced a pet's kidney failure is.

A brief simplified summary is provided below:

Stage	Criteria	Usual Signs
1	Normal creatinine/mildly increased SDMA Dilute urine/low USG	None
2	Mildly increased creatinine/SDMA Dilute urine/low USG	No or mild signs
3	Moderately increased creatinine/SDMA Dilute urine/low USG	Mild to moderate signs
4	Severely increased creatinine/SDMA Dilute urine/low USG	Moderate to severe signs

Within each stage, there are substages based on your pet's blood pressure and the amount of protein in their urine. A higher blood pressure and more protein mean a higher substage.

Each patient will eventually progress through the stages, but how quickly that happens is very hard to predict and CKD patients can worsen abruptly. Stage 1 patients can achieve a number of years of good quality active life, while stage 4 patients may have an expectancy of a number of weeks. However, individuals within stages show extremely large variation, and it may be more useful to assess how quickly your pet's results are changing over time.

Close monitoring of bloodwork and urinalysis (varying from every 3-12 months depending on stage), and starting treatments early, can slow down progression and vastly improve quality of life.

### **Useful resources**

*International Cat Care Chronic Kidney Disease* <https://icatcare.org/advice/chronic-kidney-disease/>

*International Renal Interest Society (IRIS) Information for Owners* [http://www.iris-kidney.com/education/what\\_pet\\_owners\\_should\\_know\\_ckd.html](http://www.iris-kidney.com/education/what_pet_owners_should_know_ckd.html)